

## STUDIES ON NORTH AMERICAN APION WITH DESCRIPTIONS OF TWO NEW SPECIES (Curculionidae).<sup>1</sup>

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This is the first of a series of papers in which the North American species of *Apion* will be reviewed. The weevil genus *Apion* is cosmopolitan and includes about 1500 described species of minute, mostly somber colored beetles. Since there is no distinct faunal line between Mexico and Central America the magnitude of the problem of treating the North American species is increased because of the possible occurrence in Mexico of species previously thought to be Central American. Therefore Central American species will be included in this review at least in the keys to be presented bringing the total number of described species under consideration to about 250.

The males of the majority of species of North American *Apion* exhibit peculiar secondary sex modifications of the coxae, femora, tibiae, or tarsi in the form of tubercles, mucrones, or long, stiff cilia, or by modifications of the general outline of those appendages, i.e., incrassate femora, or flattened or curved tibiae. These secondary sex modifications are constant for each species and are useful in separating species. In general the male beak is shorter, stouter, and more pubescent than is true of the female. Usually the fifth ventral abdominal segment is deflected and visible in side view and the elytral tips are broadly rounded.

The female lacks the secondary sex characters of the male. In general the female beak is longer, more slender, smoother, and tends to be glabrous; the fifth ventral segment is retracted and invisible; and the elytral tips are acute and in some cases obviously prolonged.

All measurements of total length in this review exclude the beak and are based on a straight line extending from the front margin of the eye to the tip of the elytra. Width is measured at the widest portion of the elytra. The beak is measured along a straight line taken from the front margin of the eye to the tip of the beak, excluding the mandibles. The prothorax is measured along a straight line at right angles to the axis of the posterior margin and extending to the dorsal anterior margin as seen laterally; the head and prothorax are measured in the same way, the line extending to the anterior margin of the eye. The frons is measured at its least width.

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Measurements used in this paper were made with an eye piece micrometer in a binocular microscope with magnifications of 15x, 60x, and 120x.

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The following lists abbreviations that will be employed throughout the series of papers in this review to designate the deposition of specimens.

- (AMNH) American Museum Natural History
- (BMNH) British Museum (Natural History)
- (CAS) California Academy of Sciences
- (CIS) California Insect Survey
- (CNC) Canadian National Collection at Ottawa
- (CU) Cornell University



- (DGK) Authors Collection  
 (MCZ) Museum of Comparative Zoology  
 (INHS) Illinois Natural History Survey  
 (TLCC) Thomas Lincoln Casey Collection in U.S. National Museum  
 (UC) University of California  
 (UK) University of Kansas (Snow collection)  
 (UM) University of Michigan  
 (UMD) University of Maryland  
 (USNM) United States National Museum

### Apion coxale Group

Five North American species, two of which are here described for the first time, comprise a group similar in structure to *Apion coxale* Fall. The group ranges from Northeastern North America to Panama. Nothing is known regarding host plants of its members. Two distinctive characters easily separate the *coxale* group from other North American *Apion*: The deeply impressed striae on the frons adjacent to the eye and the tuberculate front coxae of the male. Additional characters of the group are as follows:

Body narrow, subparallel in form; derm black, elytra with more or less brassy luster; pubescence at base of third and to lesser degree second, fourth, and fifth elytral intervals conspicuous and coarse, on remainder of the dorsum of the elytra and prothorax, finer, less conspicuous, dense on sides of mesothorax and metepisternum; prothorax subcylindrical and subquadrate in form, apex not less than four-fifths as wide as base, sides at base slightly expanded laterally; frons narrow, wider than dorsal tip of beak, canaliculate, stria adjacent to eye deeply impressed, eyes not prominent; beak slender, curved, feebly dilated at antennal insertion; third tarsal segment strongly bi-lobed; claws with acute basal tooth; second and third tibiae of male armed with minute mucrones.

Only one other North American species, *Apion cavifrons* Lec., exhibits a frons similar to that of the *coxale* group. The beak of *A. cavofrons* is stout and in both sexes distinctly shorter than head and prothorax combined, and the species occurs along the Pacific Coast of the United States.

#### KEY TO NORTH AMERICAN SPECIES OF A. COXALE GROUP

1. Males ..... 2  
    Females ..... 6
2. Dorsum of prothorax deeply, coarsely pitted, interspaces between pits cariniform and smooth; Mexico to Panama ..... **colon** Sharp  
    Dorsum of prothorax finely punctured, interspaces between punctures flat and alutaceous ..... 3
3. Beak distinctly shorter than head and prothorax ..... 5  
    Beak equal in length to head and prothorax ..... 4
4. Black with obscure bronzy luster on elytra; dorsum of elytra beyond basal third with inconspicuous, minute pubescence; head in lateral view constricted behind eyes interrupting dorsal outline; Mexico to Panama ..... **lassum** Sharp  
    Black with strong brassy luster on elytra; dorsum of elytra with scant but evident pubescence; head not constricted behind eyes, dorsal outline from frons to vertex nearly a straight line; Mexico ..... **neocoxale** n. sp.

5. Beak one-third to two-fifths longer than prothorax, somewhat deflexed beyond middle; nearly cylindrical beyond middle; Eastern United States ..... **coxale** Fall  
 Beak one-fourth longer than prothorax, nearly straight, distinctly depressed in apical half; Arizona ..... **occiduum** n. sp.
6. (1) Dorsum of prothorax deeply, coarsely pitted, interspaces between pits cariniform and smooth; Mexico to Panama ..... **colon** Sharp  
 Dorsum of prothorax finely punctured, interspaces between punctures flat and alutaceous ..... 7
7. Pubescence of dorsum of elytra beyond middle inconspicuous; beak three-fourths longer than prothorax; Mexico to Panama ..... **lassum** Sharp  
 Pubescence on dorsum of elytra conspicuous ..... 8
8. Beak not more than three-fifths longer than prothorax; prothorax in side view feebly convex; elytra with feeble greenish brassy luster; Eastern United States .... **coxale** Fall  
 Beak three-fourths longer than prothorax; prothorax in side view convex, highest point in front of middle; elytra with strong brassy luster; Mexico ..... **neocoxale** n. sp.

### **Apion colon** Sharp

*Apion colon* Sharp, 1890, Biol. Centr.-Amer., Col., 4 (pt. 3): 57, pl. 3, fig. 5; Chittenden, 1908, U.S. Agric. Bull., 64 (4): 31.

Length: 2.00 to 2.18 mm.; width 0.81 to 0.93 mm. Black, elytra with obscure brassy luster, base of antennae piceous; pubescence white, fine, on dorsum of prothorax and elytra minute, inconspicuous, base of third elytral interval with dense spot of coarse scales, base of second, fourth, and fifth intervals with several coarse scales. Beak slender, feebly curved; of male slightly shorter than head and prothorax, one-half longer than prothorax, attenuate to basal two-fifths, apical three-fifths nearly cylindrical; dull, finely alutaceous, punctation sparse, shallow, tip more shining; of female slightly longer than head and prothorax, three-fourths longer than prothorax, nearly cylindrical, finely alutaceous, tip shining. Antennae inserted at distance from eye equal to width of frons, of male behind basal fifth, of female behind basal sixth of beak; first segment as long as next three; second segment slightly shorter than next two; club 0.20 x 0.08 mm. Frons one-third wider than dorsal tip of beak. Prothorax at base as wide as long, widest at basal third; in profile feebly convex; punctation very coarse, irregular, deep, from 0.03 to 0.06 mm. in diameter on dorsum of prothorax, interspaces very narrow, cariniform; basal fovea moderately deep, linear, extending one-third length of prothorax. Elytra at humeri two-fifths wider than prothorax at base, 2.75 times as long as prothorax, length to width as 10: 6; intervals nearly twice as wide as striae, nearly flat, with minute transverse rugae and one row of indistinct punctures bearing minute scales; striae deep, with minute scales. Front femora four times as long as wide.

Special male character: mucro of second tibiae larger than mucro of third tibiae.

MATERIAL EXAMINED.—Six females, three males, one male compared with type by G. A. K. Marshall.

KNOWN DISTRIBUTION: MEXICO: Cuernavaca (BMNH) (CAS), Chilpancingo (BMNH), Temescaltepec (USNM), Tepeltapa (BMNH); Morelos: Pte. de Ixtla (TLCC); Puebla: 35 mi. S. Puebla (DGK). GUATEMALA: Zapote (BMNH). PANAMA: Taboga Is (BMNH).

The coarsely, deeply, irregularly sculptured dorsum of the prothorax easily distinguishes this species from its allies.



***Apion lassum* Sharp**

## FIGURE 7

*Apion lassum* Sharp, 1890, Biol. Centr.-Amer., Col., 4 (pt. 3): 55.

Length: 1.88 to 2.20 mm.; width: 0.81 to 0.94 mm. Black, elytra with obscure brassy luster, antennae piceous. Pubescence on dorsum of elytra minute, inconspicuous except at base of third through fifth elytral intervals where it is coarse and evident, especially the male. Beak feebly, evenly curved, in basal three-fourths dull, alutaceous, moderately punctured, apex smooth, shining; of male as long as head and prothorax, one-half longer than prothorax; of female slightly longer than head and prothorax, three-fourths longer than prothorax, nearly cylindrical. Antennae inserted at distance from eye one-half greater than width of frons, at basal one-fourth of beak; first segment nearly as long as next four; second segment stout, one-half as long as first, a little longer than next two; club 0.22 x 0.08 mm. Frons but little wider than dorsal tip of beak. Prothorax as wide or slightly wider at base than long, widest at basal third, in side view feebly convex; punctation 0.03 mm. in diameter, shallow, somewhat deeper toward apex of disc, interspaces flat, alutaceous, less than diameter of punctures, becoming wider laterally in basal one-fourth, basal fovea shallow, short. Elytra at humeri one-fourth wider than prothorax at base, nearly three times as long as prothorax, length to width as 11: 6.5; intervals flat, nearly smooth, twice as wide as striae, bearing a single row of fine, inconspicuous punctures with minute pubescence; striae deep. Ventral abdominal punctation deep, moderate, moderately dense.

MATERIAL EXAMINED.—5 males, 5 females, one male determined by Hans Wagner.

KNOWN DISTRIBUTION.—The United States: Arizona: Chiricahua Mts. (UK). MEXICO: San Luis Potosi: 40 mi. W. Antiguo Morelos, El Salto (DGK); Tamazunchale (DGK); 30 mi. S. Tamazunchale (CAS). PUEBLA (CAS). Mexico: Temescaltepec (CAS). Vera Cruz: 60 mi. SE Cordoba (DGK); Jicaltepec (MCZ). GUATEMALA: (BMNH). PANAMA: Taboga Is. (BMNH); Summit, Panama C. Z. (BMNH).

The long, evenly curved beak and nearly glabrous posterior dorsum of the elytra easily distinguish this species from its allies.

***Apion neocoxale* new species**

## FIGURE 5 &amp; 6

Holotype: Male, Cordoba, Vera Cruz, Mexico, Dr. A. Fenyès, in California Academy of Sciences.

Length: 2.13 mm.; width: 0.88 mm.

Elongate, moderately slender. Black, elytra with strong brassy luster; pubescence white, fine, very sparse, base of third elytral interval with a double row of coarse scales, base of fourth and fifth intervals with several coarse scales. Beak slender, moderately, evenly curved, equal in length to head and prothorax, one-half longer than prothorax, moderately dilated ventrally, feebly laterally at antennal insertion; basal fourth of beak dull, with sparse scales, two short rows of coalesced punctures, apical three-fourths more shining, with fine, sparse punctures arranged in rows,

becoming deeper laterally. Antennae inserted at basal one-fourth of beak at distance from eye one-half greater than width of frons; first segment slightly shorter than next three, second segment shorter than next two, club 0.25 x 0.09 mm. Frons narrow, slightly wider than dorsal tip of beak, canaliculate, broadly impressed adjacent to eyes, with a narrow cuneiform raised median area widest at base; eye not prominent. Prothorax subcylindrical in form, at base slightly wider than long, sides nearly parallel to middle, feebly arcuate to constricted apex, apex four-fifths as wide as base; in profile feebly arcuate; punctation of dorsum 0.03 mm. in diameter, deep, interspaces flat, alutaceous, irregular, generally less than diameter of punctures; basal fovea fine, moderately deep, short. Elytra at humeri one-fourth wider than prothorax at base, three times as long as prothorax, length to width as 11: 7, sides feebly diverging to widest point behind middle thence rounding to apex; intervals nearly flat, with fine transverse rugae, nearly twice as wide as striae, with one row of distinct punctures bearing fine scales, third interval twice as wide as striae with two irregular rows of punctures; striae moderately deep, with fine scales. Ventral abdominal punctation deep, moderately fine, moderately sparse. Front femora four times as long as wide. Claws with acute basal tooth.

Special male characters: front coxae bear a conical tubercle on apex, second and third tibiae armed with minute mucrones.

Allotype: female, 37 mi. S. Mexico City, Mexico, 15 March 1953, D. G. Kissinger, (USNM).

Length: 2.25 mm.; width 1.00 mm.

Beak one-sixth longer than head and prothorax, three-fourths longer than prothorax, nearly cylindrical, feebly, evenly curved, above antennal insertion beak shining, beyond basal two-sevenths dull, alutaceous, tip more shining, punctation very fine, sparse, in rows. Antennae inserted at basal fifth at distance from eye one-half greater than width of frons; first segment as long as next three, second segment shorter than next two. Frons finely striate, striae adjacent to eye finely impressed, median half elevated longitudinally above level of eyes. Dorsal surface of prothorax more densely punctate; prothorax in lateral view unevenly convex, highest point in front of middle.

One paratype, male, same data as allotype (DGK).

The male is distinct from allied species by the long beak, double row of coarse scales at base of third elytral interval, and the evident pubescence on the disc of the elytra beyond the middle. The female is distinct by the unevenly convex prothorax, more strongly convex than any allies, also by the long beak and evident elytral pubescence beyond middle.

### ***Apion coxale* Fall**

FIGURES 1, 2, AND 3

*Apion coxale* Fall, 1898, Tr. Am. Ent. Soc., 25: 13; 4 Blatchley and Leng, 1916, Rhynch. N.E. Am., p. 77.

Length: 1.75 to 2.18 mm; width 0.75 to 0.93 mm. Black, elytra with feeble greenish bronze luster. Pubescence white, fine, very sparse, basal sixth of first four elytral intervals with a single row of sparse, coarse scales. Beak slender, feebly curved; of male generally shorter than head and prothorax, from one-third to two-fifths longer



than prothorax, feebly deflexed beyond middle; basal half dull, finely strigose, with laterally strong punctation, apical half shining, more sparsely punctate; of female slightly longer than head and prothorax, from one-half to three-fifths longer than prothorax, nearly cylindrical, more evenly curved than male, moderately sparsely punctate, basal fourth and apical fourth smooth, moderately shining, portion between dull, finely strigose. Antennae inserted at distance from eye one-half greater than width of frons, male at basal fifth, female at basal sixth of beak; first segment of male shorter than next three, of female as long as next three; second segment stout, shorter than next two; club from 0.18 x 0.08 to 0.24 x 0.09 mm. Frons narrow, distinctly wider than dorsal tip of beak. Punctation of prothorax deeper on apical one-half of disc, interspaces variable, usually less than diameter of punctures; basal fovea elongate, deep basally, extending one-third length of prothorax. Elytra at humeri one-third wider than prothorax at base, three times as long as prothorax, length to width as 9: 6; intervals less than twice as wide as striae, feebly convex, with one row of fine, indistinct punctures bearing fine scales, with fine, transverse rugae. Ventral punctation of abdomen deep, moderate, moderately sparse.

**MATERIAL EXAMINED.**—75 specimens including material studied by Fall. Lectotype hereby designated as the ♂ from N. C. in Fall Collection, M.C.Z. Cat. No. 25048 Lectoparatype, ♂ D. C., U.S.N.M. Cat. No. 4212.

**KNOWN DISTRIBUTION.**—Illinois: Fountain Bluff (INHS); Pulaski (USNM). Ohio: Adams Co. (ELS) (DGK); Ashland Co. (ELS); Scioto Co. (ELS); Cincinnati (USNM). Pennsylvania: Berks Co. nr. Reading (DGK) (MDU); Easton (UC). New Jersey: Anglesea (USNM); Irvington (USNM); Gt. Notch (USNM); Mt. View (USNM); Orange Mt. (USNM); Phillipsburg (UC); Ridgewood (USNM); Raritan (USNM); Montclair and "Upper" Montclair (USNM); Woodside (USNM). Maryland: Takoma Park (DGK) (UMD); Sparrow Pt. (UC). District of Columbia (USNM). Virginia: Alexandria Co. (USNM); Chain Bridge (USNM). North Carolina: Asheville (USNM). Tennessee: Hamilton Co. (USNM). Alabama: Chambers Co., Landsdale (USNM). Mississippi (TLCC).

The males of this species can be distinguished from allies by the single row of coarse, sparse scales on the basal sixth of the second through fifth elytral intervals, the pubescence on the remainder of the elytral disc is finer than that on the basal area but is much more evident than is true of *A. lassum* Shp.; from *neocoxale* n. sp. it differs by its shorter beak and single row of scales on base of elytra. The females may be distinguished by the evenly curved beak, conspicuous pubescence on posterior dorsum of elytral, and the feebly, evenly convex prothorax as seen laterally.

#### ***Apion occiduum* new species**

##### **FIGURE 4**

Holotype: Male, Arizona, U.S.N.M. Cat. No. 63132.

Length: 1.75 mm.; width: 0.63 mm.

Pubescence similar to *A. coxale* Fall. Beak four-fifths as long as head and prothorax, one-fourth longer than prothorax, slender, nearly straight; basal one-fourth dull, strongly alutaceous, apical three-fourths polished, with strong, sparse punctures becoming finer apically, tip impunctate; apical one-half somewhat depressed. Prothorax slightly wider at base than long, apex six-sevenths as wide as base, punctation as in *A. coxale* Fall. Elytra at humeri one-fourth wider than prothorax at base, nearly 3.2 times as long as prothorax, length to width as 19: 11; intervals slightly convex, with moderately strong transverse rugae.

Female unknown. The female specimen from L. Calif. mentioned by Fall may belong here but was unavailable for study.

The short, nearly straight beak; the more nearly parallel prothorax; and elongate, narrow elytra easily distinguish this species from *A. coxale* Fall, to which it is very closely related.

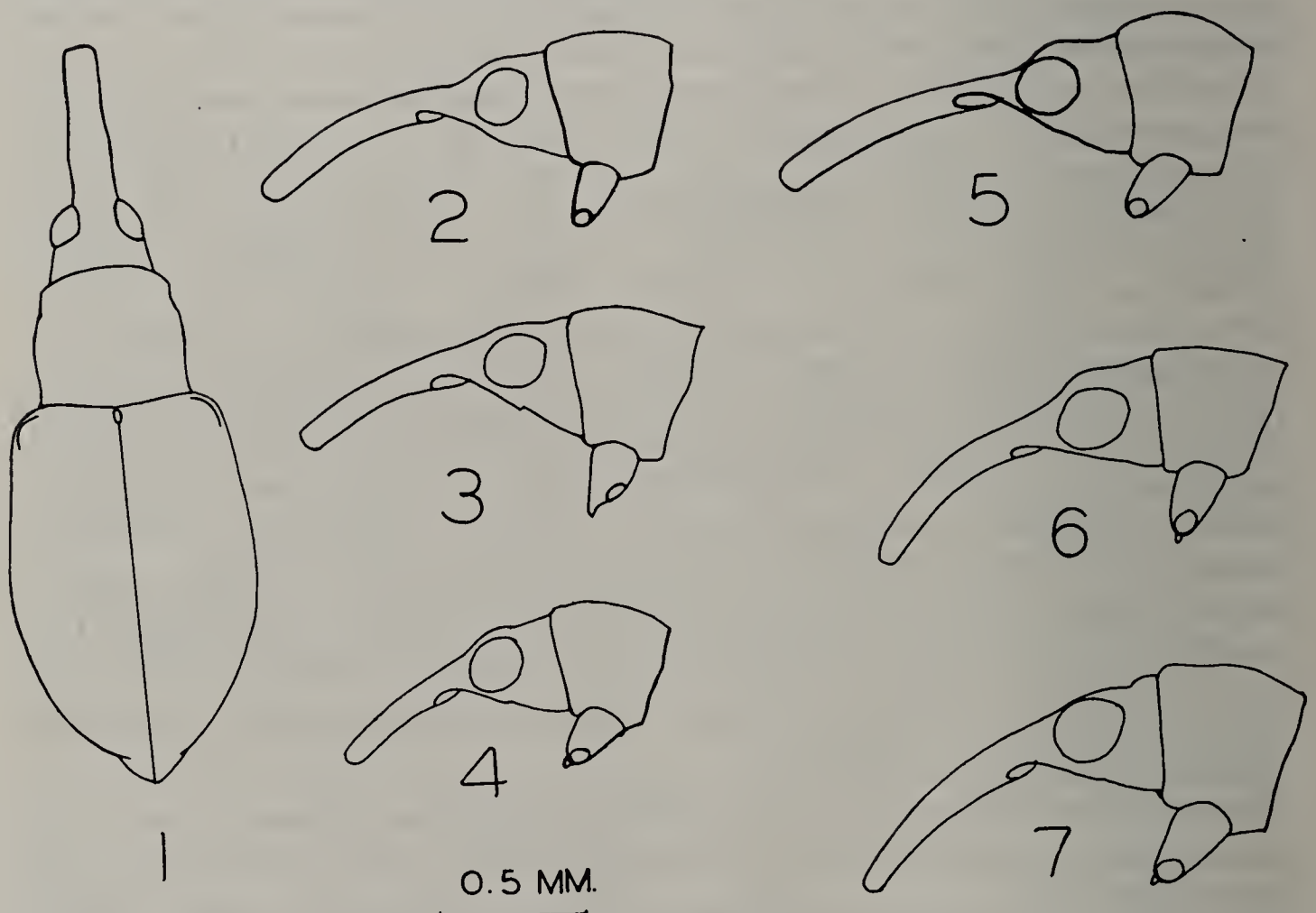


FIGURE 1. Dorsal view ♂ *A. coxale* Fall. FIGURE 2. Lateral view, head and prothorax ♀ *A. coxale* Fall. FIGURE 3. Same of ♂ *A. coxale* Fall. FIGURE 4. Same of ♂ *A. occiduum* n. sp. FIGURE 5. Same of ♀ *A. neocoxale* n. sp. FIGURE 6. Same of ♂ *A. neocoxale* n. sp. FIGURE 7. Same of ♂ *A. lassium* Sharp.

#### REFERENCES CITED

- BLATCHLEY, W. S. and C. W. LENG. 1916. Rhynchophora or weevils of North Eastern America. The Nature Publ. Co., Indianapolis, 682 pp., 155 fig.
- CHITTENDEN, F. H. 1908. An injurious North American species of *Apion* with notes on related forms. United States Dept. of Agric., Bur. Ent. Bull. 64, pt. 4, pp. 29-32.
- FALL, H. C. 1898. Revision of the species of *Apion* of America north of Mexico. Trans. American Ent. Soc., **25**: 105-184, pl. 2-5.
- SHARP, D. 1890-91. Biologia Centrali-Americana, Coleoptera, vol. 4, pt. 3, pp. 48-86, pl. 2-3.